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ABSTRACT

The Comprehensive School Mathematics Program (CSMP) curriculum is structured in spiral form so that students will have continuing exposure to each content area throughout the program. This approach makes the presentation radically different from scope and sequence approaches commonly provided in commercial textbooks. The document is divided into four main parts: (1) The World of Numbers; (2) Probability, Statistics, and Graphing Data; (3) Problem Solving and Logical Thinking; and (4) Geometry. From the variety of activities that can occur during a year, activities viewed to exemplify a particular topic or sub-topic were identified. The material attempts to identify entries by main content area, topic, and sub-topic. (MP)

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Scope and Sequence for Kindergarten and First Grade

COMPREHENSIVE SCHOOL MATHEMATICS PROGRAM

CSMP

ED226950

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INTRODUCTION

Mathematics should be presented as a unified whole; therefore, the CSMP curriculum is structured in spiral form so that students will have continuing exposure to each content area throughout the program.

A spiral approach makes it very difficult to represent in a typical scope and sequence the variety, frequency of appearance, and extent of coverage of any given mathematical concept or skill in the CSMP curriculum. At the kindergarten and first-grade levels, it is particularly difficult to label a lesson as addressing primarily one skill or concept area. Therefore, this scope and sequence is radically different from those commonly provided with commercial textbook series.

At each grade level, the CSMP Scope and Sequence is divided into four main content areas: The World of Numbers; Probability, Statistics, and Graphing Data; Problem Solving and Logical Thinking; and Geometry. Each of these content areas is divided into topics and, frequently, sub-topics. In the table of contents, you will find a complete listing of content areas, topics, and sub-topics for each grade level.

During the preparation of this scope and sequence, each lesson in the teachers' guides was examined carefully to identify activities that exemplify a particular topic or sub-topic. Once identified, the activity was described briefly and listed under the appropriate heading. When several similar activities occur in a single lesson, only one representative activity was described. Thus, an entry under Geometry (a main content area, indicated at upper right of page); MEASUREMENT (a topic, indicated in capitals); Length (a sub-topic, indicated by underline) may describe only one of perhaps several activities involving length in that lesson. The same lesson, however, also may be listed under another heading because it presents activities relating to other concept areas. Taken together, the entries under a single heading exhaust the lessons presenting that topic and represent a sample of the variety of activities that occur during the year.

For comparison purposes, each content area in this detailed scope and sequence corresponds to a screened sector of the accompanying scope-and-sequence chart, and each topic corresponds to a dotted spoke. Sub-topics cannot be readily identified from the chart.

We hope that the organization of this detailed scope and sequence is clear and easy to use and that you will find this information useful.

KINDERGARTEN

COUNTING AND COMBINATORICS

Counting Objects

K1
14 dots

K2
C-rods

K3
Children

K4
5 dots

K5
C-rods

K6
6 dots

K7
30 dots

K8
Corners, sides

K9
6 bricks

K10
6 dots

K11
Corners, sides

K12
Dots

K13
14 dots

K14
C-rods

K15
15 dots

K16
Students in class

K17
Sides

K18
Taps, jumps

K19
Steps

K21
7 dots

K22
7 dots

K23
9 chicks

K27
Blocks

K28
17 dots

K29
10 dots

K31
Sides

K32
10 dots

K33
Steps

K35
8 bricks

K38
C-rods

K39
Blocks

K40
4 dots

K41
Fingers

K42
Corners, faces

K44
100 fingers

K46
22 dots

K47
15 dots

K49
9 dots

K51
Blocks

K52
22 dots

K53
Drawings

K56
10 dots

K59
9 dots

K62
12 dots

K65
13 dots

K66
6 spaces on a game board

K70
8 dots

K71
1 to 30 dots

K75
6 dots

K76
12 dots

K77
7 checkers

K80
Fingers

K81
Steps

K85
18 dots

K86
10 dots

K89
8 dots

K92
7 dots

K95
10 checkers

K99
9 dots

K102
5 bricks

K107
10 dots

K108
14 dots

COUNTING AND COMBINATORICS

Counting

K3
Songs

K20
From 1 to 10

K44
One more

K47
In a 0 to 99 chart

K56
In a 0 to 99 chart

K62
From 1 to 99

K71
From 1 to 91

K74
One more, two more

K91
From 1 to 26

Skip Counting

K16
By 2s

K44
By 2s, by 10s

K47
By 2s, by 10s
on a 0 to 99 chart

K56
By 2s, by 10s
on a 0 to 99 chart

K62
By 2s, 5s, and 10s

K71
By 2s, 5s, and 10s

K74
By 2s

K100
By 2s

K104
By 2s

Counting Backward

K16
From 23 to 1

K20
From 10 to 1

K32
From 10 to 0

K44
One less

K47
On a 0 to 99 chart

K56
On a 0 to 99 chart

K62
From 41 to 1

K71
From 41 to 1

K74
One less

K86
From 10 to 0

NUMERATION AND PLACE VALUE

Numeral Recognition

K1
14 in a numeral row

K4
5 in a numeral row

K6
5

K7
37, 81

K9
1 to 6

K10
6

K12
1 to 30

K13
14 in a numeral row

K15
15 in a numeral row

K16
23 on a 0 to 99 chart

K21
4

K22
4, 7 in a numeral row

K25
2 to 9

K26
0 to 10

K27
1 to 25

K28
17 in a numeral row

K29
8, 10

K32
10 in a numeral row

K35
1 to 8

K36
1 to 9

K39
1 to 30

K41
1 to 6

K44
10, 20, 100

K47
On a 0 to 99 chart

K50
1 to 50 on a number line

K51
10

K56
On a 0 to 99 chart

K57
1 to 9

K59
2 to 7

K62
1 to 99

K65
13 in a numeral row

K68
1 to 50 on a number line

K70
1 to 8

K71
1 to 91

K74
0 to 10

K76
12 in a numeral row

K82
1 to 10

K83
0 to 49

K92
1 to 9

K94
0 to 10

K95
1 to 10

K97
0 to 49 on a 0 to 99 chart

K99
1 to 9

K100
2 to 40

K107
14

K108
10

NUMERATION AND PLACE VALUE

Writing Numerals	Place Value	Representing Numbers on the Minicomputer
K4 5	K106 Tens and ones	K80 1, 2, 3, 4, 5, 8
K10 6		K92 1 to 8
K15 15		K99 1 to 9
K21 4		K104 1 to 9
K22 4, 7		K106 1 to 13
K26 0 to 10		
K53 1 to 10		
K56 10		
K62 12		
K76 12		
K80 4		
K91 1 to 26		
K100 2 to 40		
K102 0 to 99		
K107 14		
K108 0 to 10		

ORDER

Comparing Sets

K6
To a set of 5 elements

K8
Number of corners, sides

K10
Of 0 to 3 elements

K11
Number of corners, sides

K13
Of 0 to 6 elements

K15
Of 0 to 5 elements

K16
Of 23 and 25 elements

K21
To a set of 7 elements

K22
Of 2 and 3 elements

K23
Of 5 and 7 elements

K28
Of 1 to 5 elements

K29
1-to-1 correspondence

K38
1-to-1 correspondence

K41
1-to-1 correspondence

K46
Of 2 to 6 elements

K47
To a set of 6, 9, or 10 elements

K49
Of 0 to 5 elements

K59
To a set of 9 elements

K65
1-to-1 correspondence

K73
1-to-1 correspondence

K76
Of 0 to 3 elements

K90
1-to-1 correspondence

K107
Of 1 and 3 elements

Comparing Numbers

K50
On a number line

K68
On a number line

K74
Smaller than 8

K82
1, 3, 6, and 10

K104
Less than 10

Number Lines

K50
0 to 50

K68
0 to 50

ADDITION

Joining Sets

K9
Of 3 and 3 elements

K15
10 + 5 = 15

K23
Of 4 and 4 elements

K32
Of 5, 3, and 2 elements

K35
For a sum of 8

K38
Of 3 and 5 elements

K41
For a sum of 6

K46
Of 2, 5, 5, and 6 elements

K65
Of 3, 4, and 6 elements

K77
Of 4 and 2 elements

K102
Of 5 and 1 elements

Story Problems

K15
Animals from several cages are freed.

K32
Children come to play in a park.

K46
Monkeys grab bananas.

K65
Animals live on a farm.

K70
Elephants perform in a circus.

K77
Frogs jump into a pond.

K92
Animals live in a zoo.

K95
Frogs jump into a pond.

K99
Vehicles park in a parking lot.

Properties

K94
3 + 7 = 10, 7 + 3 = 10

Basic Facts

K9
Sums of 6

K35
Sums of 8

K62
Sums of 12

K70
4 + 4 = 8

K80
2 + 1 = 3

K91
4 + 1 = 5

K92
4 + 2 = 6

K94
Sums of 10

K95
4 + 3 = 7

K99
4 + 4 = 8

K100
6 + 2 = 8

K106
Sums of 10

K108
Sums of 10

SUBTRACTION

Partitioning Sets

K1
4 of 14 elements

K7
3 of 10 elements

K9
Of 6 elements

K10
Of 6 elements

K13
Of 14 elements

K15
Of 15 elements

K22
Of 7 elements

K23
3 of 9 elements

K28
4 of 17 elements

K32
1 of 10 elements

K35
Of 8 elements

K41
Of 6 elements

K46
4 of 22 elements

K49
Of 9 elements

K56
Of 10 elements

K62
Of 12 elements

K77
2 of 7 elements

K80
Of 5 elements

K86
1 of 10 elements

K102
2 of 5 elements

Basic Facts

K95
6 - 2 = 4

Story Problems

K1
Four of fourteen dots in a picture represent children.

K7
Three of ten cookies are eaten.

K10
Nuts are fed to squirrels.

K13
Reindeer are grouped to pull sleighs.

K15
Animals are placed in cages.

K28
Four of fourteen chickens are hens.

K32
Children go home one-by-one.

K46
Four of twenty-two dots in a picture represent monkeys.

K49
Three of nine dishes are being juggled.

K62
Soldiers parade in formation.

K77
Frogs jump out of a pond.

K95
Frogs jump out of a pond.

MULTIPLICATION

K77
Four frogs each have a friend visiting in a pond.

DIVISION

K77
Half of six frogs go on vacation.

FRACTIONS

K77
Half of six frogs go on vacation.

PROBABILITY, STATISTICS, AND GRAPHING DATA

K66
Discuss the likelihood of winning a game.

K73
Collect and record data.

K75
Discuss the likelihood of winning a game.

K90
Collect and record data.

APPLICATIONS

K4
Put a lost duck back in order.

K6
Adjust the number of fish in a bowl.

K8
Cover an area with A-blocks.

K11
Cover an area with A-blocks.

K14
Compare the lengths of C-rods by touch.

K15
Decide how many children are needed to show 15 fingers.

K19
Walk from one point to another on a grid.

K27
Determine the length of a walk on a grid.

K34
Find a path between two points on one-way roads.

K44
Determine the number of hands, feet, and fingers on ten children.

K47
Redistribute fish evenly in bowls.

K64
Find a path between two points on one-way roads.

K66
Improve the rules of a game.

K72
Compare the lengths of students' steps.

K73
Determine which color is the most popular with your students.

K83
Determine whether a group of checkers can be paired without any checkers left over.

K84
Compare the lengths of various objects to one meter.

K90
Decide how to show the number of each type of your students' pets.

K91
Cut out a spiral.

K96
Determine which of three paths is the shortest.

K97
Find a number on a partially covered numeral chart.

REASONING

K13
Determine which sleigh is the heaviest by the number of reindeer needed to pull it.

K17
Describe a hidden A-block.

K25
Determine the rule for an A-block pattern.

K31
Describe a hidden A-block.

K37
Describe a hidden A-block.

K42
Recognize the shadows projected by various solids.

K43
Recognize that two sets intersect.

K50
Determine an unknown number on the number line.

K54
Determine the shape of the faces when a solid is sliced.

K55
Recognize that two sets intersect.

K56
Determine the number of hidden dots.

K65
Determine the number of missing dots.

K66
Determine whether a game can be won in one more play.

K67
Place A-blocks in a Venn diagram.

K68
Use clues to identify a number.

K74
Use clues to identify a number.

K75
Determine whether a game can be won in one more play.

K78
Create the mirror image of a group of C-rods.

K80
Represent numbers on the Minicomputer.

K87
Create the mirror image of a group of C-rods.

K88
Determine the rule for an A-block pattern.

K101
Describe the position of objects from several viewpoints.

Find correct views of an arrangement of objects.

K104
Use clues to identify a number.

K105
Draw the mirror image of a figure.

RELATIONS AND FUNCTIONS

Representing and Interpreting

K1
Children catching fish

K4
"I am following you."

K6
Fish sharing a bowl

K7
"I am following you."

K10
Squirrels eating nuts

K14
Reindeer pulling sleighs

K15
Animals sharing a cage

K22
Children sharing a home

K23
Create your own story.

K28
Chicks running to hens

K29
Children receiving presents

K40
A child's relationships to his family

K41
Children dancing

K46
Monkeys grabbing bananas

K49
Clowns juggling dishes

K58
"I play with you."

K61
Create your own story.

K70
"I am holding your tail."

K76
Children telling secrets

K82
"I am larger than you."
"I am smaller than you."

K85
Children changing seats

K94
Number pairs whose sum is 10

K98
Create your own story.

K103
"I smile at you."

K107
"You are in my picture."

RELATIONS AND FUNCTIONS

Composition

K52
Permutations

K85
Permutations

Converse

K82
"I am larger than you."
"I am smaller than you."

K94
Two numbers' sum
is 10.

Numerical Operations

K91
+1

K94
Two numbers' sum
is 10.

K95
+1, +2, +3, -2

K100
+2

SORTING AND CLASSIFYING

K2
C-rods

K5
C-rods

K8
A-blocks

K11
A-blocks

K14
C-rods

K17
A-blocks

K30
Solids

K31
A-blocks

K36
Right and left handprints

K37
A-blocks

K43
A-blocks

K48
Right and left handprints

K54
Shapes

K55
A-blocks

K67
A-blocks

K79
Animals with a Venn diagram

PATTERNS

K2
Creativity with C-rods

K5
Creativity with C-rods

K8
Creativity and patterns with A-blocks

K11
Patterns with A-blocks

K12
Rhythms

K14
Creativity with C-rods

K18
Rhythms

K25
Patterns with A-blocks

K32
Rhythms

K38
Patterns with C-rods

K41
Pairing objects

K44
Counting by 2s and 10s

K47
Patterns in a 0 to 99 chart

K56
Patterns in a 0 to 99 chart; counting by 2s

K62
Patterns with an array

K83
Patterns in a 0 to 99 chart; pairing checkers

K88
Patterns with A-blocks

K97
Patterns in a 0 to 99 chart

TOPOLOGICAL CONCEPTS

K45
Opened and closed

K57
Open and closed; inside and outside

K60
Number of surfaces of a Moebius band

Inside and outside of jacket

K69
Number of surfaces of a Moebius band

TAXI-GEOMETRY

K19
Walks on a grid

K27
Determine the lengths of paths on a grid

K33
Walks on a grid

K39
Determine the lengths of paths on a grid.

K51
Determine the lengths of paths on a grid.

K63
Walks on a grid

K81
Walks on a grid

K93
Walks on a grid

TRANSFORMATIONAL CONCEPTS

K24
Mirror image

K36
Flips, inside and outside

K48
Reflection and symmetry

K57
Inside and outside

K78
Mirror image

K87
Mirror image

K101
Rotation

K105
Symmetry

NETWORKS

K34
Walks on one-way roads

K45
Open and closed tracks

K57
Open and closed tracks

K64
Walks on one-way roads

MEASUREMENT

Length

K2
Compare lengths of C-rods.

K5
Compare lengths of C-rods.

K14
Compare lengths of C-rods.

K20
Compare lengths of C-rods.

K27
Compare lengths of paths on a grid.

K38
Compare lengths of C-rods.

K39
Compare lengths of paths on a grid.

K51
Compare lengths of paths on a grid.

K72
Compare lengths of students' steps.

Compare lengths to one meter.

K84
Compare lengths to one meter.

Estimate lengths to the nearest meter.

K96
Compare distances.

Area

K8
Compare areas of A-blocks.

K11
Compare areas of A-blocks.

EUCLIDEAN CONCEPTS

Shapes

K8
A-blocks

K11
A-blocks

K17
A-blocks

K25
A-blocks

K30
Faces of solids

K31
A-blocks

K37
A-blocks

K42
Shadows of solids

K43
A-blocks

K54
Faces after slicing solids

K55
A-blocks

K88
A-blocks

Solids

K30
Properties

K42
Shadows

K54
Slices

Directions

K4
Front, back, between

K18
Forward, left

K19
Back, toward, forward

K24
Forward, toward, backward

K33
Forward, toward, backward

K48
Toward, away

K63
Up, down, left, right

K70
Front, back

K81
Back, toward, forward

K93
Right, left

FIRST GRADE

COUNTING AND COMBINATORICS

Counting Objects

F1
25 dots

F2
4 C-rods

F3
10 fingers

F4
7 dots

F5
7 checkers

F7
19 dots

F8
10 dots

F9
13 dots

F10
Taps

F11
7 dots

F14
10 dots

F15
15 dots

F16
6 dots

F17
12 fingers

F18
10 dots

F22
7 dots

F23
15 dots

F25
3 dots

F28
10 dots

F29
8 dots

F37
18 dots

F40
10 dots

F41
8 dots

F42
19 dots

F43
Students in class

F45
4 dots

F47
11 dots

F48
Students in class

F60
20 dots

F61
Students in class

F63
8 dots

F72
35 dots

F73
25 dots

F75
Blocks on a grid

F79
Students in class

S1
Footsteps, palms

S4
6 dots

S5
13 dots

S9
Blocks on a grid

S11
Beans

S21
Compartments in an egg carton

S22
17 dots

S25
18 dots

Blocks on a grid

S28
5 magic peanuts

S34
8 peanuts

S35
20 dots

S36
Beans

S37
28 dots

S39
Meter sticks in a length

S49
48 dots

S53
4 dots

S55
22 dots

S57
Squares covering a shape

S58
24 dots

S61
Palms

S63
24 arrows

S67
Blocks on a grid

S74
24 toy soldiers

S76
Squares in a shape

COUNTING AND COMBINATORICS

Counting

F2
From 1 to 10

F3
From 1 to 10

F5
From 1 to 50

F7
From 1 to 25

F10.
Counting songs

F16
From 0 to 15

F17
From 1 to 100

F23
From 1 to 30

F27
From 0 to 50

F38
From 3 to 73

F43
From 1 to 30

F48
From 1 to 30

F61
From 1 to 30

F73
From 1 to 17

F76
From 9 to 1[illegible]

S5
From 77 to 90

S25
From 1 to 100

S44
From 5 to 22

S48
From 100 to 115

S51
From 1 to 30

S54
One, two, or three more than a given number

S59
From 10 to 24

S67
From 15 to 26

S75
From 102 to 122

Estimating Quantity

F48
Of students in class

F65
Of coins in a container

S11
Of beans in a jar

S14
Of fingers of students in the class

S15
Of coins in a container

S36
Of beans in a jar

S38
Of coins in a container

S51
Of students in class

S73
Of coins in a container

COUNTING AND COMBINATORICS

Skip Counting

F7
By 2s

F10
By 2s

F17
By 10s

F23
By 2s

F27
By 2s, by 10s on a 0 to 109 chart

F34
By 2s on a number line

F38
By 2s, by 10s on a 0 to 109 chart

F43
By 2s

F44
By 2s on a number line

F48
By 2s

F50
By 3s

F52
By 5s on a 0 to 109 chart

F56
By 10s

F58
By 10s on a 0 to 109 chart

F59
By 2s, by 3s on a number line

F61
By 2s

F65
By 5s

F68
By 5s, by 10s

F71
By 2s

F72
By 2s

F73
By 2s, by 3s

F77
By 2s, 3s, and 4s on a number line

S6
By 5s, by 10s

S8
By 10s

S14
By 10s

S15
By 5s

S25
By 2s, 3s, and 10s

S32
By 3s, by 5s on a number line

S33
By 2s

S35
By 3s, 5s, 6s, and 10s

S38
By 10s, by 5s

S41
By 2s

S45
By 2s, by 5s on a 0 to 109 chart

S47
By 5s

S51
By 3s

S56
By 5s, by 10s

S57
By 10s

S59
By 2s, 3s, 4s, 5s, 6s, and 9s on a number line

S66
By 2s, 3s, 4s and 6s on a number line

S67
By 2s, 4s, and 5s

S69
By 10s on a 0 to 109 chart

S71
By 3s

S75
By 5s and 10s

S77
By 10s

By 2s, by 3s on a number line

S78
By 5s

COUNTING AND COMBINATORICS

Counting Backward

F2
From 10 to 1

F3
From 10 to 1

F7
From 25 to 1

F10
From 10 to 1

F23
From 30 to 1

F27
On a 0 to 109 chart

F38
From 7 to 1

F40
From 10 to 1

F43
From 30 to 1 on a number line

F44
By 2s

F56
By 10s

F58
By 10s on a 0 to 109 chart

F60
From 20 to 1

F61
By 2s

F68
By 5s, by 10s

S3
From 42 to 0

By 2s, by 3s

S5
From 76 to 64

S16
By 2s, by 3s

From 9 to 2

S21
From 32 to 23

S25
From 11 to 0

S35
By 2s

S44
From 5 to 2

S48
From 99 to 88

S52
By 3s

From 3 to 0 on a number line

S54
One, two, or three less than a given number

S59
From 10 to 0 on a number line

S67
From 19 to 8

S77
By 2s on a number line

Combinatorics

S38
Each of four coins is either a dime or a nickel.

S41
Find all of the numerals that can be written with the digits "2", "1", and "3".

S73
Each of six coins is either a dime or a penny.

S77
Find all of the numerals that can be written with the digits "9", "4", and "7".

NUMERATION AND PLACE VALUE

Numeral Recognition

F1
25 on a number line

F2
2 to 18

F3
0 to 10

F4
6, 7, 8, and 10

F5
1 to 50

F7
7 on a number line

F9
13 on a number line

F10
0 to 10

F14
37, 81

F15
2 to 20

F17
38

F21
10

F25
1 to 12

F27
0 to 109 on a chart

F28
0 to 11

F29
1 to 8

F30
1 to 10

F32
0 to 10

F38
0 to 109 on a chart

F39
0 to 20

F41
1 to 46

F42
13

F46
0 to 26

F56
10 to 90

F70
1 to 10

F71
120 to 935

F73
0 to 109

F74
1 to 80

S4
1/2

S5
76

S6
429

S13
1/2

S17
100 to 9,401

S19
1/2

S25
1 to 100

S33
Students' house numbers

S35
0 to 407

S41
132

S48
4 to 1,001

S51
1 to 100

S53
1 to 130

S59
0 to 24

S61
62 to 106

S67
5 to 109

S68
1,000

S77
100, 6058

NUMERATION AND PLACE VALUE

Writing Numerals

F2
3 to 25

F6
1 to 20

F7
7

F15
2 to 20

F16
1 to 15

F17
38

F18
10

F21
14

F27
1 to 50

F28
10, 11

F34
5 to 46

F36
0 to 99

F38
5 to 73

F39
14

F41
1 to 17

F42
82

F44
1 to 35

F46
4 = 2 + 2

F48
2 to 26

F49
0 to 99

F51
100

F52
2 to 29

F59
0 to 45

F61
4 to 17

F63
0 to 39

F66
3 to 72

F68
5 to 103

F71
6 to 999

F73
1 to 90

F74
5 to 82

F77
0 to 36

S2
1 to 160

S3
0 to 51

S5
0 to 102

S6
0 to 913

S7
286

S9
12 to 50

S11
136

S12
0 to 999

S16
1 to 55

S18
114

S23
2,000,000

S24
100

S25
1 to 100

S33
Students' house numbers

S34
548

S35
0 to 210

S36
175

S37
7 x 4 = 28

S41
321

S42
1 to 82

S44
5 to 40

S45
6 to 96

S47
0 to 100

S48
4 to 1,002

NUMERATION AND PLACE VALUE

Writing Numerals - Continued

S52
0 to 36

S56
0 to 50

S57
1 to 10

S61
12 to 10

S62
1,040

S67
4 to 458

S69
16 to 97

S71
0 to 52

S75
6 to 138

S77
42 to 1,600

S78
15 to 92

Place Value

F17
Tens and ones

F21
Tens and ones

F25
Tens and ones

F28
Tens and ones

F34
Tens and ones

F39
Tens and ones

F42
Tens and ones

F49
Tens and ones

F51
Hundreds, tens, and ones

F53
Tens and ones

F58
Tens and ones

F69
Tens and ones

F74
Hundreds, tens, and ones

F79
Hundreds, tens, and ones

S7
Hundreds and tens

S8
24 1s two 10s and four 1s

S14
1,000s; 100s; 10s; and 1s

S17
1,000s; 100s; 10s; and 1s

S34
Hundreds

S41
Hundreds, tens, and ones

S58
Hundreds, tens, and ones

S63
Tens and ones

S68
2 x 2, 2 x 20, 2 x 200

S73
Hundreds and tens

S77
1,000s; 100s; 10s; 1s

NUMERATION AND PLACE VALUE

Representing Numbers on the Minicomputer

F21
1, 2, 3, 4, 8

F25
1 to 10

F28
1 to 14

F30
0 to 10

F32
1 to 10

F34
10, 20, 40, 80

F36
1 to 99

F39
0 to 20

F41
1 to 46

F42
1 to 82

F44
15, 11, 19

F47
1 to 11

F49
1 to 99

F51
100, 200, 400, 800

F53
16

F56
10, 20, ...90

F58
80

F62
0 to 20

F64
71

F66
3 to 82

F68
113

F69
0 to 99

F71
6 to 999

F72
35

F73
1 to 88

F74
144

F76
89

F78
128

F79
100, 200, 400, 800

S1
71

S2
24

S3
57

S6
356

S7
286

S11
136

S12
0 to 999

S14
6, 60, 600, 6000

S17
1,000

S18
156

S23
1 to 9,999

S24
1 to 19

S25
1 to 19

S33
Students' house numbers

S34
548

S35
13 to 407

S42
79

S45
75

S51
20 to 100

S54
57

S58
58

S62
1,040

S65
59

S67
3 to 458

S69
69

S73
406

S74
24

S75
24

S76
65

S77
45 to 809

ORDER

Comparing Sets

F1
Of 0 to 4 elements

F2
Of 0 to 5 elements

F4
1-to-1 correspondence

F5
To a set of 8 elements

F7
Of 2, 3, 3, and 7 elements

F11
To a set of 5 elements

F17
Of 4 and 8 elements

F25
Of 3 and 2 elements

F37
Of 0 to 5 elements

F41
Of 3, 5, and 8 elements

F65
40 sticks of gum and the students in class

S47
Of 0, 3, and 7 elements

S63
Of 0 to 4 elements

Number Lines

S5
0 to 102

S11
120 to 150

S24
0 to 50

S25
1 to 100

S32
0 to 20

S35
98 to 210

S36
150 to 180

S48
0 to 1,002

S51
0 to 30

S59
0 to 24

S66
0 to 18

S67
4 to 100

S77
98 to 214

Story Problems

F4
Children walk dogs.

F11
Adjust the number of fish to be five in each bowl.

F17
The school with the most fish will be eaten.

F25
The school with the most fish will be eaten.

F46
The school with the most fish will be eaten.

Comparing Numbers

F4
8 and 10

F25
$6 > 2 + 2$

F26
To 7

F35
To 12

F45
Name progressively larger or smaller numbers.

ORDER

Comparing Numbers-Continued

F46
8 > 5

F52
To 20

n and n + 2

F54
5, 99, 27, and 1000

F68
To 113

F72
To 35

n and n + 2

F73
5 + 5 > 8

F74
To 144

Change one of the addends in a sum and determine whether the sum is now more, less, or the same as before.

F76
More than 60 and less than 70

F79
To 56

S5
11 and 13

S6
13 + 7 > 12 + 7

S7
To 286

Change one of the addends in a sum and determine whether the sum is now more, less, or the same as before.

S9
Name progressively larger or smaller numbers.

S11
To 136

S16
250 and 249

S21
To 48

S23
More than 300

S24
To an unknown number on a number line

S26
12 x 3 and 36

S28
62 + 4 < 62 + 12

S29
57 and 41

S34
127 + 275 + 146 and 400

S36
To 175

S38
20¢ and 40¢

n, n-1, n-2, and n-3

S41
312 and 213

S48
To an unknown number on a number line.

21 + 27 to twice the number of students in class

S51
To 6 and 18

S64
3 x 2 to 2 + 3

S68
In a sequence of problems

S69
n and n + 10

S73
To 406

Two 100s and four 40s is more than 200

Change one of the addends in a sum and determine whether the sum is now more, less, or the same as before.

S77
947 and 974

S78
n and n + 5

35

ADDITION

Joining Sets

F2
Of 1, 2, 3, and 4 elements

F5
7 + 3 = 10

F7
Of 2 and 3 elements

F8
4 + 3 + 1 + 1 + 1 = 10

F11
For a sum of 6

F17
For a sum of 7

F18
5 + 2 + 3 + 4 + 1 = 15

F29
4 + 3 = 7

F40
Of 5, 2, and 3 elements

F41
8 + 4 = 12

F43
12 = 5 + 5 + 2

F51
8 + 4 = 12

F56
Of tens

F65
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40

F68
Of five fingers

F72
7 + 7 + 7 + 7 + 7 = 35

F75
2 + 5 = 7

S8
Of 4, 10, and 10 elements

ADDITION

Story Problems

F2
Birds from several nests go on a picnic.

F7
Students from two classes go on a walk together.

F8
Children share candies.

F18
Horses share apples.

F29
A dog has four sisters and three brothers.

F40
Children play in a park.

F41
Brothers collect pennies.

F51
Animals are seen in the woods.

F56
Purchases are made at a bakery.

F58
Purchases are made at a pet shop.

F64
Purchases are made at a toy shop.

F66
Five crayons join eight crayons.

F68
Four classes of students need hotdogs.

F74
Children compete in a hotdog eating contest.

F76
Two brothers have 64¢ and 25¢ to spend together.

S1
Purchases are made at a fast food restaurant.

S6
Purchase ingredients for a birthday cake.

S24
Several children put an odd number of pennies into a bag.

S34
A bake sale is held.

S48
Two students have brought brownies to school.

S57
A long addition problem must be solved.

S58
Two classes of students are going on a field trip.

Estimation

F56
15 + 13

F58
59 + 22

F68
27 + 32 + 29 + 25

F74
Number on the Minicomputer

F79
28 + 28

S1
29 + 19 + 23

S6
61 + 45 + 89

S7
Number on the Minicomputer

S24
1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19

S34
127 + 275 + 146

S73
Number on the Minicomputer

ADDITION

Basic Facts and Mental Arithmetic

F11
7 + 3 = 10

F17
5 + 2 = 7

F18
6 + 4 = 10

F21
4 + 1 = 5

F25
2 + 1 = 3

F27
4 + 1 = 5

F28
10 + 0 = 10

F29
4 + 3 = 7

F32
1 + 1 = 2

F34
3 + 2 = 5

F36
20 + 3 = 23

F38
7 + 1 = 8

F39
8 + 2 = 10

F41
4 + 2 = 6

F42
4 + 4 = 8

F44
6 + 2 = 8

F46
8 = 4 + 4

F47
4 + 2 = 6

F48
6 + 2 = 8

F51
10 + 10 = 20

F52
7 + 1 = 8

F53
20 + 8 = 28

F56
30 + 10 = 40

F58
20 + 20 = 40

F59
13 + 2 = 15

F61
Complete an addition table.
Example: "8 + 7 = 15."

F62
6 + 6 + 6 = 18

F63
14 + 2 = 16

F64
Sums of 7

F65
Sums of the values of three coins

F66
8 + 5 = 13

F67
11 + 2 = 13

F68
15 + 5 = 20

F69
8 + 2 = 10

F72
4 + 2 = 6

F73
13 + 2 = 15

F74
6 + 10 + 1 = 17

F76
9 + 4 = 13

F77
6 + 3 = 9

F78
8 + 8 = 16

S2
8 + 5 = 13

S3
10 + 2 = 12

S5
4 + 9 = 13

S6
Complete an addition table.
Example: "3 + 4 =7."

S7
80 + 20 = 100

S12
26 + 3 = 29

S13
Check a magic square.
Example:
"3 + 5 + 7 = 15."

ADDITION

Basic Facts and Mental Arithmetic - Continued

S14
4,000 + 2,000 = 6,000

S15
5 + 5 + 5 = 15

S16
100 + 2 = 102

S17
800 + 200 = 1,000

S18
40 = 20 + 20

S19
Check a magic square.
Example:
"6 + 1 + 8 = 15."

S21
28 + 1 = 29

S23
6 + 6 = 12

S24
Sums of 20

S25
8 + 3 = 11

S26
4 + 3 = 7

S27
7 + 7 = 14

S29
Sums of 7

S32
3 + 3 + 3 = 9

S35
Complete an addition table.
Example: "5 + 3 = 8."

S39
Sums of 6

S41
6 + 1 = 7

S42
10 + 10 = 20

S43
6 + 6 = 12

S44
5 + 1 = 6

S45
12 + 20 = 32

S46
40 = 20 + 20

S47
25 + 5 = 30

S48
21 + 27 = 48

S52
9 + 3 = 12

S54
10 + 1 + 1 + 1 = 13

S55
42 + 42 = 84

S56
20 + 10 = 30

S57
10 + 10 + 10 + 10 + 10 + 5 = 55

S58
35 + 23 = 58

S59
6 + 4 = 10

S62
2 + 6 = 8

S63
20 + 40 = 60

S64
21 + 21 = 42

S65
45 + 14 = 59

S66
12 + 4 = 16

S67
7 + 4 = 11

S68
1,000 + 1,000 = 2,000

S69
46 + 10 = 56

S71
21 + 3 = 24

S73
(2 x 100) + 80 + 20 = 300

S74
8 + 4 = 12

S75
42 + 10 = 52

S77
38 + 2 = 40

S78
26 + 5 = 31

S79
3 + 10 = 13

ADDITION

On the Minicomputer

F36
20 + 3 = 23

F44
(3 x 4) + (3 x 1) = 15

F47
4 + 6 + 1 = 11

F51
8 + 4 = 12

F56
15 + 13 = 28

F58
59 + 22 = 81

F62
6 + 6 + 6 = 18

F64
42 + 29 = 71

F66
15 + 21 = 36

F68
27 + 32 + 29 + 25 = 113

F69
24 + 46 = 70

F71
14 + 16 + 12 + 14 = 56

F74
21 + 8 = 29

F76
64 + 25 = 89

F79
28 + 28 = 56

S1
29 + 19 + 23 = 71

S6
61 + 45 + 89 = 195

S7
(3 x 80) + (4 x 10) + (3 x 2) = 286

S11
16 + 18 + 15 + 21 + 14 + 15 + 19 + 18 = 136

S13
7 + 14 + 9 = 30

S14
40 + 60 + 50 + 50 + 60 + 50 = 310

S19
15 + 14 + 13 = 42

S24
1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19 = 100

S34
127 + 275 + 146 = 548

S36
16 + 34 + 22 + 28 + 27 + 23 + 25 = 175

S45
21 + 48 = 69

S48
21 + 27 = 48

S58
35 + 23 = 58

S65
23 + 14 = 37

S69
46 + 18 = 64

S75
24 + 10 = 34

S77
51 + 26 = 77

S78
65 + 12 = 77

ADDITION

Properties

F67
8 + 3 = 3 + 8

F75
5 + 2 = 2 + 5

S5
4 + 9 = 9 + 4

S28
66 + 35 = 35 + 66

Vertical Format and Algorithm

F56
$$\begin{array}{r} 15 \\ +\ 13 \\ \hline 28 \end{array}$$

F58
$$\begin{array}{r} 59 \\ +\ 22 \\ \hline 81 \end{array}$$

F69
$$\begin{array}{r} 24 \\ +\ 46 \\ \hline 70 \end{array}$$

F76
$$\begin{array}{r} 64 \\ +\ 25 \\ \hline 89 \end{array}$$

S1
$$\begin{array}{r} 29 \\ 19 \\ +\ 23 \\ \hline 71 \end{array}$$

S6
$$\begin{array}{r} 61 \\ 45 \\ +\ 89 \\ \hline 195 \end{array}$$

S19
$$\begin{array}{r} 21 \\ +\ 8 \\ \hline 29 \end{array}$$

S58
$$\begin{array}{r} 46 \\ +\ 23 \\ \hline 69 \end{array}$$

S63
$$\begin{array}{r} 21 \\ +\ 40 \\ \hline 61 \end{array}$$

S65
$$\begin{array}{r} 45 \\ +\ 14 \\ \hline 59 \end{array}$$

S78
$$\begin{array}{r} 22 \\ +\ 14 \\ \hline 36 \end{array}$$

MULTIPLICATION

Repeated Addition

F43
3 + 3 + 3 + 3 = 4 x 3

F58
8 tens is 80.

F62
6 + 6 + 6 = 3 x 6

F65
5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 8 x 5

F68
20 fives is 100.

F72
7 + 7 + 7 + 7 + 7 = 5 x 7

F78
2 x 8 = 8 + 8

F79
28 + 28 = 2 x 28

S2
3 + 3 = 2 x 3

S6
4 x 6 = 6 + 6 + 6 + 6

S8
17 + 17 + 17 + 17 + 17 = 5 x 17

S15
5 + 5 + 5 = 3 x 5

S19
8 + 8 = 2 x 8

S21
12 + 12 + 12 + 12 = 4 x 12

S23
2 x 8 = 8 + 8

S26
12 + 12 + 12 = 3 x 12

S27
7 + 7 = 2 x 7

S32
29 + 29 + 29 = 3 x 29

S35
40 + 40 = 2 x 40

S43
6 + 6 = 2 x 6

S55
11 + 11 = 2 x 11

S69
12 + 12 + 12 + 12 + 12 = 5 x 12

S71
8 threes is 24.

S74
8 + 8 + 8 = 3 x 8

On the Minicomputer

F58
8 tens is 80.

F62
3 x 6 = 18

F72
5 x 7 = 35

F78
2 x 16 = 32

F79
2 x 28 = 56

S2
2 x 12 = 24

S8
5 x 17 = 85

S12
2 x 13 = 26

S21
4 x 12 = 48

S26
12 x 3 = 36

S32
3 x 29 = 87

S48
2 x 28 = 56

S69
3 x 23 = 69

S77
2 x 14 = 28

MULTIPLICATION

Story Problems

F62
Purchase three 6-bottle cartons of soda.

F65
Child has eight 5-stick packs of gum.

F68
Five appleseeds are planted in each of 20 locations.

F72
Determine the number of days in five weeks.

F78
Each day a child will receive twice as many pennies as the day before.

S8
17 monkeys will each receive five bananas.

S21
Four dozen eggs are broken.

S26
12 boxes contain three doughnuts each.

S32
Three bags of candy are shared equally among the students in class.

Frogs hop among lily pads.

S37
Seven cars need four new tires each.

S48
Each student will receive two brownies.

S49
Six octopi need new shoes.

S66
Frogs hop among lily pads.

S69
Each bottle of cider will fill 23 glasses.

Properties

S6
$2 \times 3 = 3 \times 2$

S26
$12 \times 3 = 3 \times 12$

S35
$4 \times 5 = 5 \times 4$

MULTIPLICATION

Basic Facts and Mental Arithmetic

F46
3 x 2 = 6

F62
3 x 6 = 18

F72
5 x 7 = 35

F78
2 x 4 = 8

S2
2 x 3 = 6

S6
3 x 10 = 30

S12
2 x 5 = 10

S16
2 x 10 = 20

S19
2 x 8 = 16

S23
2 x 100 = 200

S27
2 x 50 = 100

S35
2 x 30 = 60

S43
2 x 6 = 12

S48
2 x 28 = 56

S55
2 x 42 = 84

S56
2 x 10 = 20

S64
2 x 21 = 42

S68
2 x 400 = 800

S74
3 x 8 = 24

S77
2 x 800 = 1,600

S79
2 x 5 = 10

Estimation

F62
3 x 6

F65
8 x 5

F68
20 fives

F72
5 x 7

S2
2 x 12

S8
5 x 17

S21
4 x 12

S26
12 x 3

S69
3 x 23

SUBTRACTION

Partitioning Sets

F1
9 of 25 elements

F2
Of 15 elements

F5
7 - 2 = 5

F8
Of 10 elements

F11
Of 6 elements

F14
3 of 10 elements

F18
Of 15 elements

F21
Of 3 elements

F28
10 - 3 = 7

F29
1 of 8 elements

F40
1 of 10 elements

F43
Of 12 elements

F60
1 of 6 elements

F63
8 - 5 = 3

F67
11 - 3 = 8

F75
7 - 5 = 2

S5
13 - 4 = 9

S15
Of 15 elements

S67
12 - 4 = 8

Inverse of Addition

F28
10 - 3 = 7; 7 + 3 = 10

F63
8 - 5 = 3; 3 + 5 = 8

F67
8 + 3 = 11; 11 - 3 = 8

F72
2 + 2 = 4; 4 - 2 = 2

F75
7 - 2 = 5; 5 + 2 = 7

F77
9 - 3 = 6; 6 + 3 = 9

S3
6 - 2 = 4; 4 + 2 = 6

S5
4 + 9 = 13; 13 - 9 = 4

S7
5 + 3 = 8; 8 - 3 = 5

S52
3 + 3 = 6; 6 - 3 = 3

S76
65 - 41 = 24; 24 + 41 = 65

S78
16 - 5 = 11; 11 + 5 = 16

SUBTRACTION

Story Problems

F11
A mailman delivers birthday cards.

F63
Some parrots are given away.

F67
Motorcycles are Yamahas or Hondas.

F75
Books are about cowboys or dinosaurs.

S3
A book is partially read.

S5
Students have come to school on skateboards or bicycles.

S18
Some pennies are spent.

S29
Several guppies are given away.

S34
A kickball is purchased.

S42
A $20 bill is used to pay for groceries.

S46
Some pears are taken.

S54
Many chicks have died.

Basic Facts and Mental Arithmetic

F67
11 - 3 = 8

F72
4 - 2 = 2

F77
9 - 3 = 6

S2
13 - 3 = 10

S3
2 - 2 = 0

S7
5 - 3 = 2

S16
11 - 2 = 9

S21
30 - 3 = 27

S25
10 - 1 = 9

S32
29 - 26 = 3

S34
$5.48 - $4.00 = $1.48

S35
31 - 2 = 29

S38
25 - 3 = 22

S41
11 - 3 = 8

S44
9 - 4 = 5

S52
24 - 3 = 21

S54
10 - 1 - 1 - 1 = 7

S55
22 - 11 = 11

S59
18 - 6 = 12

S64
9 - 2 = 7

S65
59 - 11 = 48

S67
16 - 1 = 15

S68
10 - 8 = 2

S71
32 - 3 = 29

S77
49 - 2 = 47

S78
16 - 5 = 11

S79
12 - 2 = 10

SUBTRACTION

On the Minicomputer

S3
57 - 44 = 13

S18
156 - 42 = 114

S29
57 - 16 = 41

S42
20 - 12 = 8

S46
54 - 28 = 26

S54
100 - 56 = 44

S65
37 - 10 = 27

S76
65 - 41 = 24

S77
69 - 20 = 49

Estimation

S18
156 - 42

S29
57 - 16

S42
$20 - $12

S46
54 - 28

S54
100 - 56

S65
59 - 11

Vertical Format and Algorithm

S3
$$\begin{array}{r} 57 \\ -\ 44 \\ \hline 13 \end{array}$$

S18
$$\begin{array}{r} 114 \\ -\ 12 \\ \hline 102 \end{array}$$

S29
$$\begin{array}{r} 30 \\ -\ 8 \\ \hline 22 \end{array}$$

S42
$$\begin{array}{r} 20 \\ -\ 12 \\ \hline 8 \end{array}$$

S65
$$\begin{array}{r} 59 \\ -\ 11 \\ \hline 48 \end{array}$$

DIVISION

Equal Partitioning of Sets

F43
12 = 3 + 3 + 3 + 3

S4
1/2 x 6 = 3

S13
1/2 x 8 = 4

S19
1/2 x 16 = 8

S25
1/2 x 18 = 9

S43
1/2 x 8 = 4

S55
1/2 x 22 = 11

S58
24 bottles into cartons of eight

S71
24 children into groups of three

Inverse of Multiplication

S19
2 x 8 = 16; 1/2 x 16 = 8

S25
2 x 9 = 18; 1/2 x 18 = 9

S27
2 x 50 = 100; 1/2 x 100 = 50

S35
2 x 30 = 60; 1/2 x 60 = 30

S43
2 x 20 = 40; 1/2 x 40 = 20

S55
1/2 x 22 = 11; 2 x 11 = 22

S64
2 x 21 = 42; 1/2 x 42 = 21

S68
1/2 x 800 = 400; 2 x 400 = 800

S76
2 x 12 = 24; 1/2 x 24 = 12

DIVISION

Story Problems

F43
Share 12 candies evenly among several children.

S4
Share six cookies fairly between two children.

S13
Share eight candies fairly between two children.

S25
Share 18 seeds fairly between two squirrels.

S32
Share three bags of candies equally among the students in class.

S55
Share 22 pennies evenly between two people.

S58
Put 24 bottles in eight-bottle cartons.

S64
A farmer is giving half his animals to each of his two children.

S71
The crew of a fishing boat will receive half of the catch.

24 children are jumping rope with three in a group.

Basic Facts and Mental Arithmetic

S19
1/2 x 16 = 8

S27
1/2 x 14 = 7

S35
1/2 x 60 = 30

S43
1/2 x 12 = 6

S68
1/2 x 800 = 400

S71
1/2 x 80 = 40

S79
1/2 x 10 = 5

On the Minicomputer

S55
1/2 x 84 = 42

S64
1/2 x 28 = 14

S71
1/2 x 80 = 40

S76
1/2 x 24 = 12

Estimation

S55
1/2 x 22

S64
1/2 x 242

S71
1/2 x 42

$\square$ x 3 = 24

FRACTIONS

Equal Partitioning of Sets

S4
1/2 x 6 = 3

S13
1/2 x 8 = 4

S19
1/2 x 16 = 8

S25
1/2 x 18 = 9

S43
1/2 x 8 = 4

S55
1/2 x 22 = 11

S58
24 bottles into cartons of eight

S71
24 children into groups of three

Equal Partitioning of Wholes

S36
Cakes are cut into halves using a line of symmetry.

S43
Find one-half of a length of string.

S76
Two half-squares have the same area as one whole square.

Story Problems

S4
Share six cookies fairly between two children.

S13
Share eight candies fairly between two children.

S25
Share 18 seeds fairly between two squirrels.

S36
Share cookies in the shape of the digits 0 to 9 fairly between two children.

S55
Share 22 pennies evenly between two people.

S58
Put 24 bottles into eight-bottle cartons.

S64
A farmer is giving half of his animals to each of his two children.

S71
The crew of a fishing boat will receive half of the catch.

24 children are jumping rope with three in a group.

NEGATIVE NUMBERS

Joining sets

S28
$7 + \hat{4} = 3$

S34
$8 + \hat{3} = 5$

S47
$3 + \hat{4} + 6 + \hat{2} = 3$

S61
$5 + \hat{3} = 2$

S67
$9 + \hat{5} = 4$

Basic Facts and Mental Arithmetic

S5
Numbers less than zero exist.

S9
Zero is more than ?.

S47
$\hat{3} + \hat{2} + 4 + 8 = 7$

S52
Sums of 0

S61
Sums of 1 or $\hat{1}$

$\hat{3} + \hat{2} = \hat{5}$

S67
$12 + \hat{4} = 8$

S72
$0 + \hat{2} = \hat{2}$

S77
$\hat{1} + 201 = 200$

Story Problems

S28
An elephant collects peanuts in a bag. When a magic peanut is put into the bag, it causes one regular peanut in the bag and itself to disappear.

S34
An elephant collects peanuts in a bag.

S47
An elephant collects peanuts in a bag.

S52
An elephant collects peanuts in a bag, but they all disappear.

S61
An elephant collects peanuts in a bag, and all but one of them disappear.

S67
An elephant discovers that four peanuts are missing.

S72
Pairs of magic peanuts are put into a bag.

Properties

S52
$6 + \hat{6} = 6 - 6$

S67
$12 + \hat{4} = 12 - 4$

MULTIPLES AND DIVISORS

Multiples

F7
Of 2

F23
Of 2

F34
Of 2

F43
Of 2

F44
Of 2

F50
Of 3

F52
Of 5

F56
Of 10

F58
Of 10

F59
Of 2, of 3

F61
Of 2

F68
Of 5, of 10

F72
Of 2

F73
Of 2

F77
Of 3

S3
Of 2, of 3

S6
Of 10, of 5

S14
Of 10

S15
Of 5

S25
Of 10, of 2

S32
Of 5, of 3

S35
Of 5, 3, and 6

S38
Of 10, of 5

S45
Of 2, of 5

S47
Of 5

S51
Of 3

S52
Of 3

S56
Of 5, 10, and 25

S57
Of 10

S59
Of 3, 4, 6, and 9

S66
Of 2, 3, 4, and 6

S67
Of 2, 5, and 4

S71
Of 3

S77
Of 3

Common Multiples

S32
15 is a multiple of 5 and 3

S66
12 is a multiple of 6 and 4

DECIMALS

S6
195¢ is written $1.95.

S18
114 pennies is $1.14.

S24
100 pennies is $1.00.

S34
548 pennies is $5.48.

53

APPLICATIONS

F2
Decide how many children are needed to show 15 fingers.

F6
Find a path on one-way roads.

F10
Find a safe place for a mouse on a one-way road map.

F13
Draw a picture comparing the heights of your family's members.

F17
Decide how many children are needed to show 12 fingers.

F22
Distribute birthday cards with limitations.

F31
Find a path on one-way roads.

F42
Decide how many children are needed to show 15 fingers.

F56
Decide how many children are needed to show 90 fingers.

15¢ + 13¢ = 28¢

F57
Find your location on a seating plan.

F58
Decide how many children are needed to show 80 fingers.

59¢ + 22¢ = 81¢

F64
49¢ + 29¢ = 71¢

F65
Determine the values of various combinations of three coins.

F72
Determine the number of days in five weeks.

F73
Determine the values of various combinations of coins.

F76
64¢ + 25¢ = 89¢

F78
2 x 16¢ = 32¢

F79
Determine the number of hands on 28 children.

S1
Measure a length with footsteps.

29¢ + 19¢ + 23¢ = 71¢

Determine a combination of coins with a value of $2.

S6
61¢ + 45¢ + 89¢ = $1.95

Determine the values of various combinations of coins.

S14
Decide how many children are needed to hold up 100 fingers.

S15
Determine the values of various combinations of coins.

APPLICATIONS - Continued

S18
114 pennies is equal to $1.14.

156¢ - 42¢ = 114¢

S19
Put 16 checkers into two equal piles.

Determine whether or not a square is magic.

S21
A dozen eggs is 12 eggs.

S24
100 pennies is equal to $1.00.

Find an easy way to add 1 + 3 + 5 + 7 + 9 + 11 + 13 + 15 + 17 + 19.

S25
Determine the values of various combinations of nickels and pennies.

S26
A dozen donuts is 12 donuts.

S33
Determine the locations of houses on a street by their house numbers.

S34
Recognize that there are 100 pennies in $1.

548 pennies is equal to $5.48.

$5.48 - $4.00 = $1.48.

S35
Determine the values of various combinations of coins.

S36
Cut cookies into halves.

S38
Determine the values of various combinations of coins.

S39
Measure a chalkboard with a meter stick.

S42
$20 - $12 = $8

S43
Decide how to cut a piece of string so it will be exactly half as long as another string.

S46
Determine how many pears are left after students take some away.

S47
Determine which path yields the most peanuts.

S48
Determine whether 21 + 27 brownies will be enough for each student to receive two.

S56
Determine the number of nickels that equal a half dollar.

S57
Find a quick way to add 1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10.

Cover shapes with 10 cm squares.

S69
Determine the number of donuts in five dozen.

S73
Determine the values of various combinations of dimes and pennies.

REASONING

F3
Remember colors of C-rods.

F6
Explain why a place on a one-way road map is inaccessible.

F9
13 shoes imply how many children?

F15
Determine which dots in a picture represent girls.

F18
Determine the number of hidden dots.

F19
Use clues and a code to identify an A-block.

Ask questions to determine which A-block is hidden.

F21
Represent numbers on the Minicomputer.

F22
Determine the rule for an A-block pattern.

F23
Determine the number of hidden dots.

Determine which dots in a picture represent boys.

F24
Place A-blocks in a Venn diagram.

Recognize that two sets intersect.

F25
Represent numbers on the Minicomputer.

F26
Arrange five numbers in order.

F28
Represent numbers on the Minicomputer.

Determine the number of hidden dots.

F30
Use clues to identify an object.

F31
Explain why a place on a one-way road map is inaccessible.

F32
Determine the rule for an A-block pattern.

F33
Place cars in a Venn diagram.

F43
Determine that counting students in different ways does not change their number.

F45
If neither person is shorter, then they are the same height.

F52
Recognize that as we count by 2s the numbers become larger.

Use clues to identify a number.

F53
Represent 16 in different ways.

F55
Put a dot for yourself in a Venn diagram.

F65
Use clues to identify a combination of coins.

F69
Sort A-blocks by the attribute <u>not</u> red.

F70
Determine which number is missing.

F71
Explain why double the number of students in class is equal to the sum of double the number of students in each row.

REASONING - Continued

F72
Realize that 13 is skipped if you start at 2 and count by 2s.

Determine an operation which will take 4 and produce 2.

F77
Find several numbers that will be skipped when you count by 3s.

S1
Explain why some students' desks are seven palms long and others are eight or nine palms long when the desks are of the same length.

S4
Determine the rule for a separation of A-blocks into two groups.

S6
Choose eight numbers to fit a given ordering.

S9
Choose five numbers to fit a given ordering.

S15
Determine the number of hidden dots.

Use clues to identify an unknown combination of coins.

S16
Determine the rule for a numerical pattern.

S17
Find an operation that will take 5 and produce 8.

S18
Determine the rule for a separation of A-blocks into two groups.

Explain how to calculate 49 - 24 mentally.

S21
Find an operation that will take 32 and produce 23.

S23
Recognize a rule that will sort odd and even numbers when they are represented on the Minicomputer.

S24
Use clues to identify an unknown number on a number line.

S27
Recognize the children who are represented in a special relationship.

S28
Explain why 62 + 4 is less than 62 + 12, without calculations.

S31
Recognize that three sets intersect.

S32
Determine a rule for a numerical pattern.

Predict an intersection of the multiples of 5 and 3.

S34
Explain why 127 + 275 + 146 is more than 400 without calculations.

S37
Determine the labels of unknown sets in a Venn diagram.

S38
Use clues to identify a combination of coins.

S39
Explain why it takes more of a shorter unit to measure a given length.

S44
Recognize that three sets intersect.

S48
Use clues to identify an unknown number on the number line.

S49
Determine the labels of unknown sets in a Venn diagram.

REASONING - Continued

S51
Use clues to identify an unknown number.

S52
Determine what could have happened to obtain zero peanuts in Eli's bag.

S59
Explain why 18 is skipped when you start at 1 and count by 2s.

S61
Explain why it takes more of a shorter unit to measure a given length.

Determine what could have happened to obtain one peanut in Eli's bag.

S65
Find an operation that can be done twice starting with 0 and producing 12.

S66
Recognize that the intersection of two sets is empty.

Use clues to determine the location of an unknown child in a Venn diagram.

Predict an intersection of the multiples of 4 and 6.

S67
Find an operation that takes 12 and produces 8.

S68
Recognize patterns in a sequence of problems.

S72
Determine the labels of unknown sets in a Venn diagram.

S73
Use clues to identify an unknown combination of coins.

S74
Find numbers that can be added to 10, 12, or 16 to produce 24.

S76
$2n + 41 = 65$; find n.

S79
Determine the labels for unknown sets in a Venn diagram.

Recognize that the intersection of two sets is empty.

Determine the rule for a numerical pattern.

RELATIONS AND FUNCTIONS

Representing and Interpreting

F1
Cats eating mice

F2
Birds sharing a nest

F4
Children taking dogs for a walk

F7
Students running to their teachers

F9
Pairing left and right shoes

F11
Mailman delivering birthday cards

F13
"I am taller than you."

F14
"I am following you."

F15
"You are my sister."

F22
Mailman delivering birthday cards

F23
"You are my sister."
"You are my brother."

F26
"I am less than you."

F29
"I am following you."

F35
"I am less than you."

F37
"I sent you a Halloween card."

F42
Create your own story.

F43
Sharing 12 candies fairly between several children

F45
"I am less than you."

"I am shorter than you."

F47
Create your own story.

F52
"I am less than you."

F54
"I am more than you."

"I am less than you."

F55
Family members in a Venn diagram

F57
"I have the same first initial as you."

F73
"I have the same first initial as you."

"I am more than you."

F79
"I have the same first initial as you."

S4
Sharing cookies fairly between two children

S6
"I am less than you."

S9
"I am less than you."

S13
Sharing eight candies fairly between two children

S22
"I am talking to you."

"I am following you."

S25
Sharing 18 seeds fairly between two squirrels

S27
"I have the same first initial as you."

S28
$7 + \hat{4} = 3$

"I am less than you."

S29
Number pairs whose sum is 7

S34
$8 + \hat{3} = 5$

RELATIONS AND FUNCTIONS

Representing And Interpreting - Continued

S37
Seven cars each needing four new tires

S39
Number pairs whose sum is 6

S41
"I am more than you."

S47
$3 + \hat{4} + 6 + \hat{2} = 3$

S49
Six octopi needing new shoes.

S51
"I am more than you."

S53
Create your own story.

"I throw a ball to you."

S55
Sharing 22 pennies equally between two people

S58
Putting 24 bottles into eight-bottle cartons

S63
"I gave you a May basket."

S64
"I am less than you."

S67
$12 - 4 = 12 + \hat{4} = 8$

Composition

F52
+1 followed by +1 is the same as +2.

S17
+3 is the same as +1 followed by +2.

S26
+2 three times is the same as +6.

S35
+3 twice is the same as +6.

S41
+1 followed by -3 is the same as -2.

S56
+5 twice is the same as +10.

S59
+3 twice is the same as +6.

S62
+3 followed by +2 is the same as +5.

S65
+4 three times is the same as +12.

RELATIONS AND FUNCTIONS

Converse

F9
"You are my left shoe."
"You are my right shoe."

F13
"I am taller than you."
"I am shorter than you."

F23
"I am pointing to my brother."
"I am pointing to my sister."

F54
"I am more than you."
"I am less than you."

F57
"I have the same first name as you."

F72
+2, -2

F73
"I have the same first initial as you."

F77
+3, -3

F79
"I have the same first initial as you."

S3
-2, +2; -1, +1; -3, +3

S7
+3, -3

S25
2x, 1/2x

S27
2x, 1/2x

"I have the same first initial as you."

S29
Number pairs whose sum is 7.

S35
2x, 1/2x

S39
Number pairs whose sum is 6.

S43
1/2x, 2x

S52
+3, -3; +2, -2

S59
+3, -3

S68
2x, 1/2x

S76
2x, 1/2x; +41, -41

RELATIONS AND FUNCTIONS

Numerical Operations

F16
+1

F27
+1

F34
+2

F38
+1

F44
+2

F48
+2, +1

F52
+1, +2

F59
+3, +2

F63
+1, +2

F67
+1, +2

F68
+5

F72
+2, -2

F73
+1, +2, +3

F77
+3, +2, +4,
-3, -2, -4

F78
2x

S2
2x

S3
-1, -2, -3, +2

S6
+1, +3, +5, +10

S7
+3, -3

S8
+10

S12
+3, 2x

S14
+10, +2

S16
-1, -2, -3

S17
+1, +2, +3

S21
+1, -3, -4, -9

S25
2x, 1/2x, -1,
+1, +2, +3, +10

S26
+2 to +6

S27
2x, 1/2x

S32
+5, +3

S35
2x, 1/2x, -2,
+3, +5, +6, +10

S38
-1, -2, -3

S41
-3, -2, +1

S43
1/2x, 2x

S44
+1, -2, -3, -4

S47
+5

S52
+2, +3, -2, -3

S54
+1

S56
+5, +10, +25

S59
+2 to +6, +9,
-3, -4, -6

S62
+1, +2, +3, +5,
+6

S65
+4, +6, +12

S66
+2, +3, +4, +6

S67
+1, +2, +4, +5,
-1

S68
2x, 1/2x

S69
+10

S71
+3, -3, +10

S72
+2

S75
+10, +5

S76
2x, 1/2x, +41,
-41

S77
+2, +3, +10,
-2, 2x

S78
+5

SORTING AND CLASSIFYING

F2
Birds that share a nest

F9
Left and right shoes

F11
Children's birthday cards

F12
A-blocks

F19
A-blocks by the attribute not red

F24
A-blocks using a Venn diagram

F33
Cars using a Venn diagram

F55
Students using a Venn diagram

F57
A-blocks using a table

F63
Birds that are given away

F67
Motorcycles by brand

F69
A-block by not red using a Venn diagram

F73
Students using a Venn diagram

F75
Books by topic

S4
A-blocks

S5
Students by mode of transport

S6
Put a dot for yourself in a Venn diagram.

S18
A-blocks

S23
Even and odd numbers using a Venn diagram

S24
Odd numbers

S30
Even and odd numbers using a Venn diagram

S31
A-blocks

Find a place for yourself in a Venn diagram.

S33
Even and odd numbers using the Minicomputer

S35
Children using a Venn diagram

S37
A-blocks using a Venn diagram

S41
Even and odd numbers

S44
Place dots for cars in a three-set Venn diagram.

S49
A-blocks using a Venn diagram

S51
The odd and even multiples of three using a Venn diagram

S66
Children using a three-set Venn diagram

S67
Place a dot for yourself in a Venn diagram.

S72
A-blocks using a Venn diagram

S77
Odd and even numbers using a Venn diagram

A-blocks using a Venn diagram

S79
A-blocks using a Venn diagram

PATTERNS

F3
Rhythm of taps

F12
Creativity with
A-blocks

F16
Dot arrays

F22
A-blocks

F27
In a 0 to 109 chart

F32
A-blocks

F38
In a 0 to 109 chart

F48
Count by 2s.

F50
Count by 3s.

F56
Count by 10s.

F58
Count by 10s using
a 0 to 109 chart.

F68
Count by 5s.

F71
Count by 2s using
a 0 to 109 chart.

S8
Count by 10s using
a 0 to 109 chart.

S13
Sums of 15 shown on
a magic square

S14
Count by 10s using
a 0 to 109 chart.

S15
A 3-by-5 dot array

S16
Determine the rule for
a numerical pattern.

S19
Sums of 15 shown in
a magic square

S23
Odd and even numbers
on the Minicomputer

2 x 20 = 40;
2 x 200 = 400;
2 x 2,000 = 4,000
2 x 2,000,000 = 4,000,000

S24
Odd numbers

Sums of 20

S26
A 12-by-3 dot array

S30
Even and odd numbers
on the Minicomputer

S32
Determine the rule for
a numerical pattern.

S35
A 4-by-5 dot array

S41
Even and odd numbers

S45
Count by 2s and 5s on a
0 to 109 chart.

S56
2 + 1 = 3 so
20 + 10 = 30

S57
Sums of 10

S59
Count by 2s and 5s on a
number line.

S63
2 + 4 = 6 so
20 + 40 = 60

S68
Sums of 10

2 x 4 = 8; 2 x 40 = 80;
2 x 400 = 800

S69
Add 10 in a 0 to 109
chart.

S75
Count by 10s and 20s on
a 0 to 109 chart.

S78
The one's digits
alternate when you
count by 5s.

NETWORKS

F6
Walks on one-way roads

F10
Walks on one-way roads

F31
Walks on one-way roads

S25
Walks on one-way roads

TAXI-GEOMETRY

F75
Paths on a grid

S9
Determine the lengths of paths on a grid.

S25
Determine the lengths of paths on a grid.

S67
Determine the lengths of paths on a grid.

TRANSFORMATIONAL CONCEPTS

S36
Symmetry

EUCLIDEAN CONCEPTS

F2
Above, below, left, right

F12
A-blocks

F19
A-blocks

F24
A-blocks

F32
A-blocks

F36
Tangrams

F49
Tangrams

F57
A-blocks

S4
A-blocks

S6
A-blocks

S31
A-blocks

S33
Parallel lines

S37
A-blocks

S46
Tangrams

S49
A-blocks

S55
Tangrams

S57
Squares

S72
A-blocks

S76
Squares

MEASUREMENT

Length

F2
Compare lengths of C-rods.

F3
Compare lengths of C-rods.

F7
Compare lengths of C-rods.

F13
Compare heights of students.

F75
Compare lengths of paths on a grid.

S1
Compare lengths measured with non-standard units.

Compare length of footsteps.

S9
Compare lengths of paths on a grid.

S25
Determine the lengths of paths on a grid.

S39
Measure the length of a chalkboard with a meter stick.

Estimate the length of a chalkboard in meters.

S43
Find one-half of a length of string.

S61
Measure a meter length with palms.

Compare widths of palms.

S67
Determine lengths of paths on a grid.

Area

F36
Cover areas with tangrams.

F49
Cover areas with tangrams.

S46
Cover areas with tangrams.

S55
Cover areas with tangrams.

S57
Cover shapes with 10 cm squares.

Estimate the number of squares needed to cover a shape.

S76
Color a shape on a grid with an area of five squares.

Two half squares have the same area as a whole square.

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